Met Office

NEWS

1.5 °C still alive, but most likely in 2100

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Overshooting 1.5°C is the most likely scenario, says a Met Office study

A Met Office study published in the journal *Weather* shows pledges to cut greenhouse gas emissions agreed last year at the Glasgow climate conference (COP 26) are not likely to be sufficient to restrain global temperature rise to 1.5°C or below compared with pre-industrial levels.

The pledges – known as Nationally Determined Contributions (NDCs) – show further ambition is required at this year's COP in Egypt to keep the hope of 1.5°C alive. However, the study shows there is more likelihood to overshoot 1.5°C and then come back down to 1.5°C by 2100.

Professor Jason Lowe OBE is head of Climate Services at the Met Office. He said: "Current NDC updates still don't take us onto pathways to limit global temperature rise to 1.5°C. If the world doesn't pledge larger 2030 emission reductions, then exceeding 1.5°C becomes more likely."

Dr Andy Wiltshire is the Met Office Head of Earth System and Mitigation Science and lead author of the analysis. He said: "Implementing all the pledges from Glasgow would bring annual global emissions of carbon-dioxide or their equivalents down to between 45 and 49 gigatonnes by 2030. But at this level there are no future pathways likely to avoid going above 1.5°C. To give the 1.5°C threshold at least a 50% chance of being met without continued exceedance we need to see annual emissions down to around 30 gigatonnes by 2030."

Dr Wiltshire continued: "If 1.5°C is exceeded over a sustained period, of say several decades, then this is known as overshoot. The downside of not staying below 1.5°C altogether is a greater risk this century of more severe climate impacts, such as those triggered by increased melting of icecaps or collapse of an ecosystem like the Amazon rainforest."

Dr Camilla Mathison, Mitigations Science Manager at the Met Office, was an author on the paper. She said: "If we overshoot 1.5°C, it doesn't have to be permanent. With deep and rapid reductions post 2030, and development of diverse technologies for the removal of atmospheric carbon dioxide it remains feasible to meet 1.5°C by the end of the century."

Dr Laila Gohar, a Met Office co-author, said: "Solutions to remove carbon-dioxide from the atmosphere include: the restoration or creation of natural vegetation that draw down carbon-dioxide; the roll-out of technologies which remove carbon-dioxide; or strategies involving the use of biofuels with carbon capture and storage."

Prof Lowe added: "There is a big caveat with relying on technology to remove carbon from the atmosphere: it has never been deployed at the scale necessary to remove sufficient carbon-dioxide from the atmosphere to lower global temperature significantly."

Accepting temporary overshoot now and relying on future recovery burdens future generations with big rates of emission reduction in excess of those required if larger reductions are made now, but this requires urgent, rapid and immediate emission reductions that go beyond the pledges currently made.

Prof Liz Bentley, is the Chief Executive of the Royal Meteorological Society, which publishes the *Weather* journal. She said: "This paper still gives us hope of keeping 1.5 alive but the message is clear - it will require significant and rapid cuts in greenhouse gas emissions."

The NDC pledges from COP26 cited in the study are based on an original analysis by Climate Action Tracker (CAT).

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